

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION**

ORDER R7-2015-0028

WASTE DISCHARGE REQUIREMENTS  
FOR  
ALTAGAS LTD., OWNER  
BLYTHE ENERGY, INC., OPERATOR  
BLYTHE ENERGY PROJECT  
WASTEWATER EVAPORATION PONDS  
Blythe - Riverside County

The California Regional Water Quality Control Board, Colorado River Basin Region (Colorado River Basin Water Board) finds that:

1. AltaGas Ltd. (Owner), 1411 Third Street, Suite A, Port Huron, Michigan 48061, owns the Blythe Energy Project located in Blythe, NW ¼, Section 33, T6S, R22 E, SBB&M, on private land in Riverside County. The site is located approximately 0.25 miles north of the Interstate 10 Freeway and directly east of the Blythe Airport. The site is operated by Blythe Energy, Inc. (Operator), 385 North Buck Boulevard, Blythe, California 92225.
2. The Blythe Energy Project is a 520 megawatt natural gas fired power generation facility. Two (2) different waste streams of non-hazardous industrial wastewater are discharged into two (2) lined evaporation ponds, which are currently regulated by Waste Discharge Requirments (WDRs) Order R7-2002-0012. The primary stream will be discharged from the circulating water treatment plant system designed to recover essentially all water for reuse, leaving only a small stream for disposal in the evaporation ponds. This stream will be brine with very high concentrations of total dissolved solids (TDS) and other non-hazardous constituents. The second waste stream discharged to the ponds will be from blow-down from the heat recovery steam-generators, drain water from the oil water separator, and the waste stream from the reverse osmosis (RO) section of the de-mineralizer unit. The wastewater volume is expected to be minimal because the water in the system will be treated and recycled to provide total consumption (zero consumption) of water under optimal operating conditions. The Discharger states that, in general, the typical flow rate from the two (2) waste streams will be approximately four (4) gallons-per-minute (GPM). Remaining wastewater will be discharged to the evaporation ponds.
3. Local ground water is used as a water supply for the Blythe Energy Project. The quality of local ground water is satisfactory for use in the water-cooling system, but must be treated prior to use with the Heat Recovery Steam Generators (HRSGs) and inlet air coolers as well as for potable water for the plant. The

Discharger has provided a summary of the expected composition of the waste brine discharge to the evaporation ponds based on raw water analysis and the average raw water quality from the production wells. The method of cooling selected by the Discharger relies on the use of water from on-site wells.

4. Definition of terms used in this Board Order:

- a. Waste Management Facility (WMF) – The entire parcel of property where waste discharge operations are conducted.
- b. Waste Management Unit (WMU) – An area of land, or a portion of a waste management facility, where waste is discharged. The term includes containment and ancillary features for precipitation and drainage control and monitoring.
- c. Discharger – Discharger means any person who discharges waste that could affect the quality of the waters to the state, and include any person who owns a waste management unit or who is responsible for the operation of a waste management unit (Title 27, California Code of Regulations).

5. The following are the waste streams that are being discharged to the double lined ponds:

- a. Circulating Cooling Water System Blowdown: Sodium hypochlorite or equivalent will be used as a biocide in the cooling tower to prevent biological growth and remain as acids and amines in the wastewater. Adjusting the pH of the cooling tower basin water with sulfuric acid minimizes scale buildup in the condenser. Sulfate salts in the wastewater are the result of sulfuric acid addition. To further inhibit scale formation, an organic phosphate solution may be fed into the circulating water system as a sequestering agent in an amount proportional to the circulating water blowdown.
- b. Heat Recovery Steam Generator (HRSG) Blowdown: Treated and untreated water are combined to be used at the steam generator. A steam-driven turbine generator at the power block produces electrical energy. Water removed from the HRSG system will be taken to the circulating cooling water system where it will make up a part of the cooling water requirement.
- c. Air Inlet Chiller Cooling Tower Blowdown: Water removed from the inlet chiller cooling towers is made up of water discharged from the main cooling tower that is cycled up to approximately 11 times the concentration of TDS in the raw water. The blowdown water from the air inlet chiller cooling tower is directed to the wastewater reverse osmosis (RO) and

evaporator for water purification and reuse.

- d. Reverse Osmosis Unit Wastewater Discharge: The RO units treat the wastewater blowdown from the chiller condenser tower. The brine wastewaters generated by the RO units contain relatively high concentrations of TDS. Wastewater generated at the RO units is either re-circulated back to the cooling water system for reuse, or discharged to the evaporation ponds. The waste brine from the RO unit is directed to a brine concentrator (evaporator) for further water recovery. The evaporator recovers water from the RO brine stream through vapor compression. Part of the recovered cleaned water is directed to a polishing unit where the water is highly purified for use in the steam cycle (HRSG). The remaining water is returned to the circulating cooling water system. The highly concentrated brine waste from the evaporator is then discharged to the evaporation pond.
  - e. Demineralizer Unit Wastewater Discharge: The demineralizer units purify by ion exchange. Wastewater from the demineralizing water treatment system will consist of the reject steam from the RO units. The RO reject steam will contain the constituents of the raw water supply, concentrated approximately four times. These waste streams will be directed to the circulating cooling water system for reuse.
  - f. Plant Drains-Oil/Water Separator: Miscellaneous plant drainage will consist of area washdown, sample drainage, condensation, and drainage from facility equipment areas. Water from these areas will be collected in a system of floor drains, sumps, and pipes and routed to the wastewater collection system. This water will be routed through an oil/water separator as required to prevent oil from entering the water system.
6. All wastes produced at Blythe Energy Project are being collected, treated if necessary, and disposed of at appropriate waste disposal sites, acceptable to the Colorado River Basin Water Board's Executive Officer. Wastes generated at the project site will include cooling tower blowdown, solid nonhazardous, hazardous (liquid and solid), and sanitary wastewater. Solid waste will also be generated in the evaporation ponds. These wastes are being periodically removed by drying the pond completely and removing the dried solids. These wastes are primarily composed of the minerals that were dissolved in the ground water source. These wastes are disposed at a permitted off site landfill, acceptable to the Colorado River Basin Water Board's Executive Officer. Sanitary wastewater is defined as those wastes generated from sinks, toilets, and other sanitary facilities. Sanitary wastes are disposed of onsite through a septic system and leach field.
  7. The two (2) evaporation ponds have a combined evaporation surface of approximately 16 acres of equal size, 8 acres each. The storage volume at high water level is about 91 acre-feet per pond. The liner system is constructed as

follows:

- a. A 60 mil HDPE upper liner, the HDPE liners shall consist of a smooth geomembrane type polyethylene resin;
- b. A drainage net that consists of a geosynthetic drainage material consisting of two (2) sets of HDPE strands to form a diamond shaped net to allow for low-resistance fluid flow;
- c. A lower 60 mil HDPE geomesh liner; and
- d. An unreinforced geosynthetic clay liner consisting of a layer of sodium bentonite between two geotextiles resting on compacted subgrade material.

Construction of the two (2) evaporation ponds allow each pond to be taken out of service periodically to allow complete evaporation and removal of the brine sludge. The brine sludge is profiled and disposed of at an appropriate off-site solid waste disposal facility in accordance with local, state, and federal regulations.

8. Local ground water is used as a water supply for the Blythe Energy Project. The source of all water is from two (2) installed on-site ground water production wells (PW-1 and PW-2). These wells are equipped with pumps submerged at a depth of approximately 400 to 420 feet bgs and sized to convey 2500 GPM each. Production Well #1 (PW-1), is screened from 160 to 580 feet bgs with a total depth of 600 feet, and PW-2 is screened from 140 to 600 feet bgs and has a total depth of 620 feet. The current static ground water level is approximately 89 feet bgs. Based on an average specific capacity of 50 GPM per foot, each well is expected to be capable of producing 2500 GPM with a draw-down of approximately 50 feet. The ground water in the project area is of drinking water quality. The water is generally either sodium sulfate or sodium chloride enriched and has an average TDS concentration of 1,000 mg/L. Ground water must be treated prior to use in the site process.
9. The Discharger states that the project site is located in the Colorado Desert Section of the Basin and Range physiographic province. Basins contain several thousands of feet of alluvium including unconsolidated to weakly consolidated sand, silt and gravel. In particular, the project site falls within the lower Colorado River Basin and is located on an alluvial terrace formed by historic river aggradation and degradation. No active or potentially active faults are known in the project area. The nearest active fault is the southern segment of the San Andreas Fault, located about 60 miles southwest of the project area near the Salton Sea. The potentially active Blythe Graben Fault is located approximately 10 miles north of the site.

10. The subject site is located within the Colorado River Basin. Hydrogeology in the project area is principally described in the United States Geological Survey (USGS) Professional Paper 486-G "Geohydrology of the Parker-Blythe-Ciobola Area, Arizona and California" (1973). In addition, the California Department of Water Resources (DWR) and USGS have performed a number of other studies. The USGS and DWR collected hydrologic data in the site vicinity until 1978. Data since that time has not been collected on a systematic basis by any agency. Ground water in the site vicinity exists primarily under unconfined (water table) conditions. Flow is generally from north to south. Ground water recharge occurs as a combination of Colorado River water to the east, subsurface inflow from the Chuckwalla Basin and both surface and subsurface inflow from Palo Verde Valley drainage systems to the west, and recharge from precipitation infiltration. Ground water levels in the area fluctuate seasonally in response to the stage of the Colorado River, precipitation infiltration, and applied irrigation water. The average depth to ground water beneath the subject site is approximately 89 feet below ground surface (bgs). However, where perched aquifers are present, depth to ground water may be as shallow as 6 to 7 feet bgs. The average thickness of the aquifer in the site vicinity is 300 feet.
11. The project site is not within the immediate vicinity of any significant surface water bodies. The nearest significant surface water body is the Colorado River that is located approximately nine (9) miles due east.
12. The annual precipitation in the area is approximately 3.6 inches and the average temperature is 73.6 degrees Fahrenheit. The evaporation rate is approximately 90 inches annually.
13. Land uses at and surrounding the facility consist of the following:
  - a. Formerly and currently irrigated agricultural parcels
  - b. Blythe Municipal Airport (adjacent to the west)
  - c. Various maintained residences and outbuildings
  - d. Scattered grazing land
  - e. Open desert land
  - f. Riparian and wildlife habitat
14. The Water Quality Control Plan for the Colorado River Basin Region of California (Basin Plan), which was adopted November 17, 1993 and amended on November 16, 2012, designates the beneficial uses of ground and surface waters in this Region, and contains implementation programs and policies to achieve objectives.
15. The beneficial uses of waters in the Colorado Hydrological Unit are as follows:
  - a. Municipal Supply (MUN)
  - b. Industrial Supply (IND)

c. Agricultural Supply (AGR)

16. Federal regulations for storm water discharges were promulgated by the United States Environmental Protection Agency (USEPA) on November 16, 1990 (40 CFR Parts 122, 123, and 124). The regulations require specific categories of facilities which discharge storm water associated with industrial activity to obtain National Pollutant Discharge Elimination System (NPDES) permits and to implement Best Conventional Pollutant Technology (BCT) to reduce or eliminate industrial storm water pollution.
17. The State Water Resources Control Board (SWRCB) adopted Water Quality Order 97-03-DWQ (General Permit CAS000001) specifying WDRs for discharges of storm water associated with industrial activities, excluding construction activities, and requiring submittal of a Notice of Intent (NOI) by industries to be covered under the Permit (Industrial General Permit). On April 1, 2014, the SWRCB adopted a new Industrial General Permit (IGP), number 2014-0057-DWQ, which will become effective on July 1, 2015.
18. The Facility is subject to the federal requirements for regulation of storm water discharges associated with industrial activities since it is one of the industrial activities listed in 40 CFR 122.26(b)(14) and since there's the potential that storm water could be discharged to waters of the U.S.
19. In accordance with Section 15301, Chapter 3, Title 14 of the California Code of Regulations, the issuance of these WDRs, which govern the operation of an existing facility involving negligible or no expansion of use beyond that previously existing, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.).
20. The monitoring and reporting requirements in Monitoring and Reporting Program R7-2015-0028 are necessary to determine compliance with these WDRs and to determine the facility's impacts, if any, on ground water.
21. It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
22. The Colorado River Basin Water Board has notified the Discharger and all known interested agencies and persons of its intent to issue WDRs for the discharge and has provided them with an opportunity for a public meeting and an opportunity to submit comments.
23. The Colorado River Basin Water Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, that Board Order R7-2002-0012 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, the Discharger shall comply with the following:

A. Discharge Specifications

1. The treatment or disposal of wastes at this facility shall not cause pollution or nuisance as defined in Section 13050 of Division 7 of the California Water Code.
2. A minimum depth of freeboard of two (2) feet shall be maintained at all times in the ponds.
3. The Blythe Energy Project shall be protected from any washout or erosion of wastes or covering material, and from inundation, which could occur as a result of floods having a predicted frequency of once in 100 years.
4. The inside depth of each pond shall provide:
  - a. Sufficient depth to provide storage of the entire discharge water and brine residue (sludge).
  - b. Sufficient depth to provide for normal water level variation throughout the year due to variations in plant inflow, rainfall, and the evaporation rates.
  - c. Sufficient additional depth to provide for the increase in water level that would occur when the evaporation rate is 90 percent of the mean evaporation rate for two (2) years in a row.
  - d. Sufficient additional depth to provide additional storage capacity for increased inflow for a minimum of two (2) weeks, assuming the brine concentration and reverse osmosis (RO) equipment are both inoperable.
  - e. Sufficient depth to provide an allowance for an increase in water level during pond maintenance, assuming one (1) cell will need maintenance for a two (2) month period.
  - f. Sufficient additional depth to provide for the 100-year rainfall in addition to the maximum water level resulting from water level variations.
  - g. Sufficient freeboard above the maximum water level to provide the greater of 24 inches or the height of the wind wave run-up plus 12 inches.
5. Each pond shall be double lined. A leak detection and removal system shall be installed between the liners. The outer liner shall be a composite liner consisting of

at least 12 inches of clay or bentonite panels with a hydraulic conductivity of no greater than  $1 \times 10^{-6}$  cm/sec or equivalent, and a flexible membrane liner of 60 mil high-density polyethelene (HDPE) or equivalent. The inner liner shall also be a flexible membrane liner of 60 mil HDPE or equivalent.

6. Each cell within each pond shall contain an independent leak detection and removal system (LDRS) between the inner and outer liners.
7. There shall be no discharge of liquid wastes at this site unless approved by the Colorado River Basin Water Board's Executive Officer.
8. The Discharger shall use the constituents listed in Monitoring and Reporting Program R7-2015-0028 and revisions thereto, as "Monitoring Parameters". These monitoring parameters are subject to the most appropriate statistical or non-statistical test under Monitoring and Reporting Program R7-2015-0028, Part III, and any revised Monitoring and Reporting Program approved by the Colorado River Basin Water Board's Executive Officer.
9. The Discharger shall implement the attached Monitoring and Reporting Program R7-2015-0028, and revisions thereto, in order to detect, at the earliest opportunity, any unauthorized discharge of waste constituents from the WMF, or any unreasonable impairment of beneficial uses associated with (caused by) discharges of waste to the WMF.
10. The Discharger shall not cause the concentration of any Constituent of Concern (COC) or monitoring parameter to exceed its respective background value in any monitored medium at any Monitoring Point assigned to Detection Monitoring pursuant to Part II.B.4 of the attached Monitoring and Reporting Program R7-2015-0028, and revisions thereto.
11. The Discharger shall follow the Water Quality Protection Standards (WQPS) for detection monitoring established by the Colorado River Basin Water Board in this Board Order pursuant to Title 27. The following are five (5) parts of WQPS as established by the Colorado River Basin Water Board (the terms If art used in this Board Order regarding monitoring are defined in Part I of the attached Monitoring and Reporting Program R7-2015-0028, and revisions thereto, which is hereby incorporated by reference):
  - a. The Discharger shall test for the monitoring parameters and the COC at frequencies specified and listed in Monitoring and Reporting Program R7-2015-00XX and revisions thereto.
  - b. Concentration Limit – The concentration limits for each monitoring parameter and COC, for each monitoring point (as stated in detection Monitoring Program Part II), shall be its background value as obtained during that reporting period.

- c. Monitoring points and background monitoring points for detection monitoring shall be those listed in Part II.B. of the attached Monitoring and Reporting Program R7-2015-0028, and any revised Monitoring and Reporting Program approved by the Colorado River Basin Water Board's Executive Officer.
  - d. The Points of Compliance are shown in Part II.B of the attached Monitoring and Reporting Program R7-2015-0028.
  - e. Compliance Period – The estimated duration of the compliance period for this WMF is six (6) years. Each time the Standard is not met (i.e., releases discovered), the Landfill begins a compliance period on the date the Colorado River Basin Water Board directs the Dischargers to begin an Evaluation Monitoring Program. If the Dischargers' Corrective Action Program (CAP) has not achieved compliance with the standard by the scheduled end of the compliance period, the compliance period is automatically extended until the WMF has been in continuous compliance for at least three (3) consecutive years.
12. The Discharger shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, or pollution to occur, as indicated by the most appropriate statistical (or non-statistical) data analysis method and retest method listed in Part III of the attached Monitoring and Reporting Program R7-2015-00XX, and revisions thereto.

## B. Prohibitions

- 1. The direct discharge of any wastes to any surface waters or surface drainage courses is prohibited.
- 2. The discharge of waste to land not owned or controlled by the Discharger is prohibited.
- 3. The discharge or deposit of hazardous waste (as defined in Chapter 15) at this site is prohibited.
- 4. The discharge shall neither cause nor contribute to the contamination or pollution of ground water via the release of waste constituent in either liquid or gaseous phase.
- 5. The Discharger shall not cause nor contribute in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the unit if such waste constituents could migrate to waters of the State, in either the liquid or the gaseous phase, and cause a condition of contamination or pollution.

## C. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program R7-2015-0028, and revisions thereto, as specified by the Colorado River Basin Water Board's Executive Officer.
2. Prior to any modifications in this facility which would result in material change in the quality or quantity of wastewater treated or discharged, or any material change in the location of discharge, the Discharger shall report all pertinent information in writing to the Colorado River Basin Water Board and obtain revised requirements before any modifications are implemented.
3. Prior to any change in ownership or management of this operation, the Discharger shall transmit a copy of this Board Order to the succeeding owner/operator, and forward a copy of the transmittal letter to the Colorado River Basin Water Board.
4. The Discharger shall ensure that all site-operating personnel are familiar with the content of this Board Order, and shall maintain a copy of this Board Order at the site.
5. This Board Order does not authorize violation of any federal, state, or local laws or regulations.
6. Facilities shall be available to keep the plant in operation in the event of commercial power failure.
7. The Discharger shall allow the Colorado River Basin Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:
  - a. Enter upon the premises regulated by this Board Order, or the place where records must be kept under the conditions of this Board Order;
  - b. Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this Board Order;
  - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Board Order; and
  - d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Board Order or as otherwise authorized by the California Water Code, any substances or parameters at this location.
8. This Board Order does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

9. Unless otherwise approved by the Colorado River Basin Water Board's Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the SWRCB Division of Drinking Water. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants", promulgated by the USEPA.
10. All regulated disposal systems shall be readily accessible for sampling and inspection.
11. Adequate measures shall be taken to assure that flood or surface drainage waters do not erode or otherwise render portions of the discharge facilities inoperable.
12. The Discharger is the responsible party for the WDRs and the Monitoring and Reporting Program for the facility. The Discharger shall comply with all conditions of these WDRs. Violations may result in enforcement actions, including Colorado River Basin Water Board Orders or court orders, requiring corrective action or imposing civil monetary liability, or in modification or revocation of these WDRs by the Colorado River Basin Water Board.
13. All containment structures and erosion and drainage control systems shall be designed and constructed under direct supervision of a California Registered Civil Engineer or Certified Engineering Geologist, and shall be certified by the individual as meeting the appropriate prescriptive standards and performance goals of Title 27.
14. The Discharger shall, within 48 hours of a significant earthquake event, submit to the Colorado River Basin Water Board a detailed post-earthquake report describing any physical damages to the containment features, groundwater monitoring and/or leachate control facilities and a corrective action plan to be implemented at the Landfill.
15. The Discharger shall submit a Notice of Intent (NOI) to the SWRCB and/or maintain coverage under the Statewide General NPDES Permit for Storm Water Discharges Associated with Industrial Activities, Order 97-03-DWQ (Order 2014-0057-DWQ as of July 1, 2015), NPDES CAS000001. The Discharger shall comply with all the discharge prohibitions, receiving water limitations, and provisions of the General Permit.
16. The Discharger shall maintain, in accordance with Section 20380(b) of Title 27, assurance of financial responsibility acceptable to the Colorado River Basin Water Board's Executive Officer for initiating and completing corrective action for all known or reasonable foreseeable releases for the WMU.
17. One (1) year prior to the anticipated closure of the facility or any unit (portion) thereto, the Discharger shall submit to the Colorado River Basin Water Board, for

review and approval by the Colorado River Basin Water Board's Executive Officer, a final closure and post-closure maintenance plan in accordance with Title 27. The final closure and post-closure maintenance plan shall include seismicity studies.

18. This Board Order is subject to Colorado River Basin Water Board review and updating, as necessary, to comply with changing state or federal laws, regulations, policies, or guidelines, or changes in the Discharger characteristics.
19. All monitoring shall be conducted pursuant to Title 27 of the California Code of Regulations
20. The Discharger shall furnish, under penalty of perjury, technical monitoring program reports, and such reports shall be submitted according to Chapter 30, Division 3, Title 23 of the California Code of Regulations, as data uploads and in Portable Document Format (PDF) electronically over the internet into the State Water Board's GeoTracker database. The Facility is identified in the GeoTracker by the global identification number L100048911182 and in the California Integrated Water Quality Systems (CWIQS) by waste discharge identification (WDID) Number 7B 33 2021 001.

I, Robert Perdue, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on June 11, 2015.

Ordered By: \_\_\_\_\_ Original signed by \_\_\_\_\_  
ROBERT PERDUE  
Executive Officer